



September 21, 2018

VIA EMAIL

Cosmo Servidio
Regional Administrator
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Dear Mr. Servidio,

RE: United States Steel Corporation – Edgar Thomson Facility
Requested Information Pursuant to August 15, 2018 Notice of Violation (NOV)
Conference

On August 15, 2018, U. S. Steel met with United States Environmental Protection Agency Region III (USEPA) and Allegheny County Health Department (ACHD) at USEPA's Region III offices in Philadelphia to continue discussions regarding the allegations and operations at the Edgar Thomson facility. We greatly appreciate the opportunity to meet with the regulatory agencies and welcome continuing an open, collaborative dialogue to reach a sensible resolution of this matter.

During that conference, USEPA and ACHD conveyed their initial concepts regarding possible injunctive relief. In response, U. S. Steel expressed concerns regarding its respectful disagreement with some of the proposed injunctive relief requests and the appropriateness of certain injunctive relief given the corrective actions already implemented regarding the allegations in the NOV. At the request of USEPA, and in order to further our ongoing collaborative efforts towards resolving these issues, U. S. Steel is providing this brief report summarizing the corrective actions in response to the NOV.

In summary, U. S. Steel has made significant improvements to the Blast Furnace Casthouse Baghouse, Basic Oxygen Process Furnace Secondary Emissions Baghouse, Ladle Metallurgy Facility Baghouse, and the Basic Oxygen Process Mixer Baghouse; implemented new procedures and completed operator training. These improvements will result in preventing or minimizing the likelihood of the reoccurrence of similar deviations. Furthermore, these corrective actions have been successfully implemented and resulted in an improvement in environmental performance. A summary of those corrective actions is highlighted in Table 1, below, and an expanded summary of corrective actions is provided immediately following.

Mr. Cosmo Servidio
EPA Region III
September 21, 2018

Table 1. A summary of the corrective actions implemented by the Edgar Thomson Plant.

Emission/Process Unit	Corrective Action
Blast Furnace Casthouse Baghouse	Upgrades including replacement of cleaning air system, baghouse filter bags with new membrane style, cages, access doors, rotary valves, motors and fan sheaves
BOP Fugitive (secondary) Baghouse	Upgrades including replacement of cleaning air system, baghouse filter bags with new membrane style, cages, access doors, and rotary valves
BOP Mixer Baghouse (hot metal transfer and desulfurization)	Upgrades including replacement/repair of cleaning air system, baghouse filter bags, and access doors
BOP Ladle Metallurgy Facility (LMF) Baghouse	Upgrades including replacement of cleaning air system, and baghouse filter bags
Blast Furnace #1	Extensive research and development to fine-tune the taphole clay chemistry resulting in improved, less emissive tapping
Roadways	Re-training of 3 rd party contractors responsible for roadway watering
BOP Shop	Re-training of BOP shop employees responsible for keeping the BOP doors closed
BOP Gas Cleaning Scrubber System	Implement revised BOP Primary Emissions System fan switching procedure

In addition to the above corrective actions, U. S. Steel has implemented improvements that reduce sulfur in Coke Oven Gas, which is one of the fuels combusted at Edgar Thomson Plant. In addition, U. S. Steel Edgar Thomson Plant is near completion of the installation of a combined boiler stack (approximate cost of \$40 million) to improve SO₂ emission dispersion within the Allegheny County designated SO₂ non-attainment area, which is essential for modeling attainment for the SO₂ NAAQS. ACHD issued Edgar Thomson Plant an Installation Permit, in which the SO₂ emission limits will become effective on October 4, 2018.

Mr. Cosmo Servidio
EPA Region III
September 21, 2018

Expanded Summary of Corrective Actions

Baghouse Upgrades

U. S. Steel contracted CP Environmental to perform a thorough inspection of the four major baghouses at the Edgar Thomson plant in 2017. The baghouses inspected were the Blast Furnace Casthouse Baghouse, the Fugitive (Secondary) Emissions Baghouse, the Mixer Baghouse, and the LMF Baghouse. Following the inspections and beginning in December 2017, U. S. Steel initiated repairs to improve the performance of each of the baghouses. These repairs included the following:

Blast Furnace Casthouse Baghouse (the following repairs completed – February 2018)

- Replacement of the cleaning air system including air header piping, pulse valves, and solenoids. This new equipment will reduce or eliminate the potential for air leaks from the baghouse air cleaning system to ensure that the baghouse bags are getting a proper thorough cleaning. Keeping the bags clean will reduce the differential pressure across the baghouse and allow for more volume of air and particulate matter to be collected over the taphole on the two blast furnaces.
- Replaced the existing bags with upgraded membrane bags and replaced the bag cages. The membrane bag reduces the air to cloth ratio which will also allow for more volume of air and particulate matter to be collected over the taphole at the blast furnaces. The top flange of the cages acts as a seal from the dirty side of the baghouse compartment to the clean side. Replacing the cages with new cages ensures proper sealing and eliminates potential for particulate matter to pass through the baghouse without passing through the bags.
- Replaced access doors, frames and gaskets to all four compartments. These repairs will ensure proper sealing of the baghouse to reduce or eliminate fugitive dust escaping the baghouse compartments.
- Replacement of the rotary valves with new rotary valves as well the associated drive chains. The new rotary valves and drive chains will ensure consistent dust removal from the baghouse compartments and eliminate emissions from the valve seals.
- Replacement of the motors and fan sheaves. Replacement of the motors and sheaves will ensure the proper fan rpm is reached and thus air flow/particulate matter captured by the casthouse baghouse system.
- As these other repairs were completed, additional electrical, instrumentation and structural components, including the tube sheets were inspected and repaired as necessary. Repairing the structural components and tube sheets will minimize/eliminate the potential for emissions to bypass the baghouse bags or escape the baghouse compartments.

BOP Fugitive Baghouse (the following repairs completed – December 2017)

- Replacement of the cleaning air system including air header piping, pulse valves, and solenoids. This new equipment will reduce or eliminate the potential for any air leaks from the baghouse air cleaning system to ensure that the baghouse bags are getting a proper

Mr. Cosmo Servidio
EPA Region III
September 21, 2018

thorough cleaning. Keeping the bags clean will reduce the differential pressure across the baghouse and allow for more volume of air and particulate matter to be collected during charging of the BOP Furnace and at the BOP roof. In addition to the above repairs, the blow pipes used to direct the pulsed air into the bags were all replaced.

- Replaced the existing bags with upgraded membrane bags and replaced the bag cages. The membrane bag reduces the air to cloth ratio which will also allow for more volume of air and particulate matter to be collected during charging of the BOP Furnace and at the BOP roof. The top flange of the cages acts as a seal from the dirty side of the baghouse compartment to the clean side. Replacing the cages with new cages ensures proper sealing and eliminates potential for particulate matter to pass through the baghouse without passing through the bags.
- Replacement of the rotary valves with new style rotary valve. The new style rotary valves are more robust and will also allow for bearing replacement in place, rather than shutting down the compartment and replacing the entire rotary valve. The new rotary valves also ensure consistent dust removal from the baghouse compartments and eliminate emissions from the valve seals.
- As these other repairs were completed, additional structural components, including the tube sheets and module housing were inspected and repaired as necessary. Repairing the structural components will minimize/eliminate the potential for emissions to bypass the baghouse bags or escape the baghouse compartments.

BOP Mixer Baghouse (the following repairs completed – February 2018)

- Replacement/repairs of the cleaning air system including air header piping, pulse valves, and solenoids. This new equipment will reduce or eliminate the potential for air leaks from the baghouse air cleaning system to ensure that the baghouse bags are getting a proper thorough cleaning. Keeping the bags clean will reduce the differential pressure across the baghouse and allow for more volume of air and particulate matter to be collected over the Mixer at the BOP Shop.
- Replaced all existing bags with new bags. The bag replacement was completed in February 2018.
- Repaired all access doors, frames and gaskets. These repairs will ensure proper sealing of the baghouse to reduce or eliminate fugitive dust escaping the baghouse compartments.

BOP LMF Baghouse

- Replacement/repairs of the cleaning air system including air header piping, pulse valves, and solenoids is on-going. This new equipment will reduce or eliminate the potential for air leaks from the baghouse air cleaning system to ensure that the baghouse bags are getting a proper thorough cleaning. Keeping the bags clean will reduce the differential pressure across the baghouse and allow for more volume of air and particulate matter to be collected over the LMF furnace at the BOP Shop. Proper alignment will be ensured. These repairs are on-going.

Mr. Cosmo Servidio
EPA Region III
September 21, 2018

- Replaced the existing bags with new bags. The bag replacement was completed in February 2018.

Blast Furnace #1 Taphole Clay

Blast Furnace No. 1 experienced two non-systemic isolated issues during tapping on two separate occasions, December 20, 2016 and May 5, 2017, resulting in visible emissions allegedly exceeding both the 20% and 60% opacity standards. Issues can occur during the tapping process and can be traced back to several variables including, but not limited to the chemical composition of the clay. When a tapping issue is detected, operators take precautions by stopping drilling to let the emissions settle and allow control devices to capture emissions. The control devices include a bag house, an air curtain, and the Casthouse building.

While control devices are generally very effective in preventing visible emissions from escaping blast furnace casthouses, on rare occasions, despite best efforts to control emissions, problems with the taphole clay are experienced which can result in unwanted and unusually elevated emissions.

To determine the root cause of the visible emissions in question, a team of operators, maintenance and U. S. Steel Research personnel started an initial investigation into the root cause of abnormal emissions during blast furnace tapping on #1 Blast Furnace at the Edgar Thomson Plant which included review of gap times between casts, amount of clay volumes used to fill the taphole, tap hole drilling procedures, and general taphole condition. These variables were eliminated as possible root causes leading the team to review clay chemistry as a potential root cause.

The team has determined through research and analysis over several months that the physical and chemical properties in the clay are key factors that are considered in reducing the risks of recurrence of abnormal emissions during tapping. The team has fine-tuned the clay chemistry and worked with clay suppliers so that a continuous clay supply with the desired chemical and physical properties can be supplied over the long term. The team has been successful in implementing improvements in the selection of the clay that has minimized the risks associated with elevated emissions from tapping.

Retraining

During an inspection by ACHD, visual emissions were observed behind a vehicle at 100% opacity. This event can be attributed to not watering roadways to control the dust and debris within the plant. Edgar Thomson contracts the watering out to TMS and it is required on a daily basis. This Title V requirement was not being completed at the time of the inspection. The observation of 100% opacity emissions is isolated to this one occurrence due to a TMS employee unexpectedly calling off work and his/her responsibilities not being backfilled.

U. S. Steel's Edgar Thomson Plant environmental engineer acted quickly to meet with TMS to educate them regarding the repercussions of not replacing staff who are responsible for federally

Mr. Cosmo Servidio
EPA Region III
September 21, 2018

enforceable tasks which reduce dust pollution within the plant. Once TMS was made aware, an employee was tasked to replace the person who had called off and ensure the roads were watered. TMS has agreed to comply with the requirement moving forward.

The Edgar Thomson plant also experienced two isolated incidents which included a door being left open on the upper floor of the BOP Shop. Visible emissions were observed on two separate occasions within approximately a year of one another. Historically, any doors used by employees are required to be closed upon entry or exit to reduce the potential for dust to escape. However, these incidents are isolated due to the ability to resolve with a simple repair and sharing this information with personnel and retraining the BOP shop employees.

Personnel working in and around the BOP shop were reinstructed to ensure the door is closed properly upon entry and exit of the BOP shop. Additionally, the door was repaired with an automatic closing mechanism. Once the door was repaired and personnel were reinstructed, the potential for visible emissions to escape through BOP Shop man doors was greatly reduced if not entirely removed.

BOP Primary Emissions Systems Fan Switching Procedure

The Edgar Thomson Plant BOP Primary Emissions are collected and scrubbed at the BOP Gas Cleaning scrubber system that includes two fans and one dedicated stack to each fan. One of two scrubber stacks are in use at any given time. Visible emissions were allegedly observed at one of the BOP gas cleaning scrubber stacks. While switching from one fan (or stack) to the other, visible emissions were reported. The emission event was an isolated event which has been corrected by revising the BOP Fan Switching procedure to include the cleaning of louvers and the slow opening of louvers during a planned fan switch. When a fan switch occurs, the oncoming fan is isolated from the BOP primary system. Therefore, the emissions observed out of the stack are not BOP operating emissions. These emissions result from any leftover material that may have been captured by the fan louver or which have settled out into the bottom of the stack/fan system. By implementing a cleaning procedure and slowly opening the louvers, the potential for emissions during a fan startup are greatly minimized or eliminated.

Since the procedure has been revised and implemented, increased emissions are no longer an issue during planned fan switches. Note, during one planned fan switch after procedure implementation on October 20, 2016, an ACHD representative observed a fan switch during a visible emissions observation noting no compliance issues.

U. S. Steel appreciates USEPA and ACHD for taking the time to meet and discuss the Clean Air Act Notice of Violation/ Notice of Noncompliance on August 15, 2018. As noted above, U. S. respectfully disagrees with some of the injunctive relief concepts discussed during the meeting, especially in light of the corrective actions that have already been successfully implemented.

CONFIDENTIAL SETTLEMENT COMMUNICATION SUBJECT TO FRE 408

Mr. Cosmo Servidio
EPA Region III
September 21, 2018

These actions have resulted in an improved environmental performance at the Edgar Thomson plant. Thank you, again, for your interest and consideration of our corrective actions. We look forward to collaboratively working with you to resolve this matter.

Please contact me at (412) 433-5916 if you have any questions pertaining to the corrective actions implemented to date or the path forward.

Sincerely,



Tishie Woodwell
General Manager, Environmental Affairs

cc: Daniel E. Boehmcke, Esq., Assistant Regional Counsel, USEPA
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